

## Gene Section

### Mini Review

## BCL1 (B-cell leukemia/lymphoma 1)

Jean-Loup Huret

Genetics, Dept Medical Information, University of Poitiers, CHU Poitiers Hospital, F-86021 Poitiers, France

Published in Atlas Database: May 1998

Online updated version: <http://AtlasGeneticsOncology.org/Genes/BCL1.html>

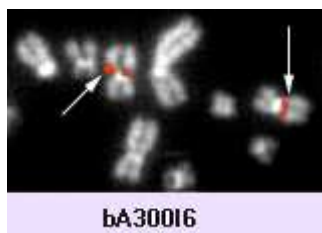
DOI: 10.4267/2042/37448

This work is licensed under a Creative Commons Attribution-Non-commercial-No Derivative Works 2.0 France Licence.  
© 1998 *Atlas of Genetics and Cytogenetics in Oncology and Haematology*

### Identity

**Other names:** PRAD1 (parathyroid adenomatosis 1)

**Location:** 11q13



BCL1 (11q13) - Courtesy Mariano Rocchi.

### DNA/RNA

#### Description

5 exons.

#### Transcription

Major transcript: 4.5 kb; coding sequence: CDS 148...1035.

### Protein

#### Description

The gene encodes the cyclin D1; 295 amino acids; 36 kDa.

#### Expression

No normal expression in lymphocytes; cell cycle dependant expression: maximal expression in G1, minimal in S.

#### Localisation

Mainly nuclear.

#### Function

Cell cycle control: G1 progression and G1/S transition; forms complexes with CDK4 and 6, and further with

RB1; phosphorylation of RB1 by cyclin D1/CDK4 removes the cell cycle arrestin G1/S start point; inhibited by P21, P15, and P16.

#### Homology

With other cyclins.

### Implicated in

**t(11;14)(q13;q32)/B-cell malignancies**

→ **BCL1 - IgH**

#### Disease

t(11;14) is mainly found in mantle cell lymphoma; also in: B-prolymphocytic leukaemia, plasma cell leukaemia, splenic lymphoma with villous lymphocytes; rarely in: chronic lymphocytic leukaemia, multiple myeloma.

#### Prognosis

According to the disease.

#### Cytogenetics

Complex karyotypes.

#### Hybrid/Mutated Gene

5' BCL1 translocated on chromosome 14 near JH (junctions genes of IgH) and C in 3'.

#### Abnormal Protein

No fusion protein, but promoter exchange; the immunoglobulin gene enhancer stimulates the expression of BCL1.

#### Oncogenesis

Overexpression of BCL1 accelerates the cell transit through the G1 phase.

#### Parathyroid adenomatosis

#### Hybrid/Mutated Gene

With PTH, the parathyroid hormone gene, sitting in 11p15.

## References

Rosenberg CL, Wong E, Petty EM, Bale AE, Tsujimoto Y, Harris NL, Arnold A. PRAD1, a candidate BCL1 oncogene: mapping and expression in centrocytic lymphoma. *Proc Natl Acad Sci USA* 1991 Nov 1;88(21):9638-42.

Rimokh R, Berger F, Delsol G, Charrin C, Berthéas MF, Ffrench M, Garosio M, Felman P, Coiffier B, Bryon PA et al. Rearrangement and overexpression of the BCL-1/PRAD-1 gene in intermediate lymphocytic lymphomas and in t(11q13)-bearing leukemias. *Blood* 1993 Jun 1;81(11):3063-7.

Bosch F, Jares P, Campo E, Lopez-Guillermo A, Piris MA, Villamor N, Tassies D, Jaffe ES, Montserrat E, Rozman C, et al. PRAD-1/cyclin D1 gene overexpression in chronic lymphoproliferative disorders: a highly specific marker of mantle cell lymphoma. *Blood* 1994 Oct 15;84(8):2726-32.

---

*This article should be referenced as such:*

Huret JL. BCL1 (B-cell leukemia/lymphoma 1). *Atlas Genet Cytogenet Oncol Haematol*.1998;2(4):111-112.

---